

What Is Claimed Is:

1. An optical integrated circuit, comprising:

a tape having a conductive pattern disposed on a surface thereof;

a die mounted to the tape and electrically coupled to the conductive pattern for providing an electronic function of the integrated circuit;

a support structure surrounding the die and bonded to the tape;

a transparent cover mounted over the die such that an optically active surface of the die is accessible through the transparent cover; and

a plurality of external contacts electrically coupled to the conductive pattern for providing an electrical interface to the die.

2. The optical integrated circuit of Claim 1, wherein the tape is a flexible plastic tape.

3. The optical integrated circuit of Claim 2, wherein the tape is a polyimide tape.

4. The optical integrated circuit of Claim 2, wherein the conductive pattern comprises an etched copper pattern on a surface of the flexible plastic tape.
5. The optical integrated circuit of Claim 1, wherein the support structure is a thin metal sheet having an aperture for accepting the die.
6. The optical integrated circuit of Claim 1, wherein the support structure is a thin epoxy film.
7. The optical integrated circuit of Claim 1, wherein the transparent cover is bonded to the die by an optically transparent adhesive to form an integrated covered die, and further comprising an encapsulant disposed between the support structure and the covered die.
8. The optical integrated circuit of Claim 7, wherein a surface of the transparent cover opposite the die is substantially conformal to a top surface of the support structure opposite the tape.

9. The optical integrated circuit of Claim 1, wherein the transparent cover is bonded to a top surface of the support structure.

10. The optical integrated circuit of Claim 1, wherein the transparent cover is a glass cover.

11. The optical integrated circuit of Claim 1, wherein the plurality of electrical contacts are solder balls forming a ball grid array, and wherein the tape is perforated to accept a portion of the solder balls.

12. The optical integrated circuit of Claim 11, wherein the conductive pattern is disposed on a surface of the tape opposite the solder balls and wherein the solder balls contact the conductive pattern through the perforations.

13. The optical integrated circuit of Claim 1, further comprising a plurality of wires for electrically coupling the die to the conductive pattern, wherein the wires are bonded to the conductive pattern and the die.

14. An optical integrated circuit, comprising:

a die for providing an electronic function of the optical integrated circuit;

a transparent cover mounted over the die such that an optically active surface of the die is accessible through the transparent cover;

a plurality of external contacts electrically coupled to the die for providing an electrical interface to the die; and

means for mounting the transparent cover over the die.

15. A method for manufacturing an optical integrated circuit,

wherein the integrated circuit comprises, a tape having a conductive pattern disposed on a surface thereon, a plurality of external contacts, a die, a support structure and a transparent cover, the method comprising:

bonding the support structure to the tape;

mounting the die on the tape within an aperture in the support structure;

connecting electrical connections on the die to the conductive pattern; and

mounting the transparent cover over the die so that an optically active surface of the die is accessible through the transparent cover.

16. The method of Claim 15, wherein the mounting comprises bonding the transparent cover to the die with an optically transparent adhesive to form a covered die.

17. The method of Claim 16, further comprising depositing an encapsulant between the covered die and the walls of the aperture.

18. The method of Claim 15, wherein the mounting comprises bonding the transparent cover over the die to a top surface of the support structure.

19. The method of Claim 15, further comprising attaching solder balls to the tape, whereby a ball grid array is formed on a bottom side of the tape opposite the die.

20. The method of Claim 15, further comprising etching the conductive pattern on the tape.